DOCUMENT RESUME

ED 193 054 SE 032 955

| | |
|---|---|
| TITLE | Conservation Awareness Guide. |
| INSTITUTION | Santa Rosa County Board of Public Instruction, Milton, Fla. |
| SPONS AGENCY | Florida State Dept. of Education, Tallahassee. Office of Environment Education. |
| PUB DATE | 77 |
| NOTE | 54p. |
| EDRS PRICE | MF01/PC03 Plus Postage. |
| DESCRIPTORS | *Conservation (Environment); *Conservation Education; Elementary Education; *Elementary School Curriculum; *Energy; Environmental Education; *Natural Resources; Resource Materials; Science Education; *Science Instruction |

ABSTRACT

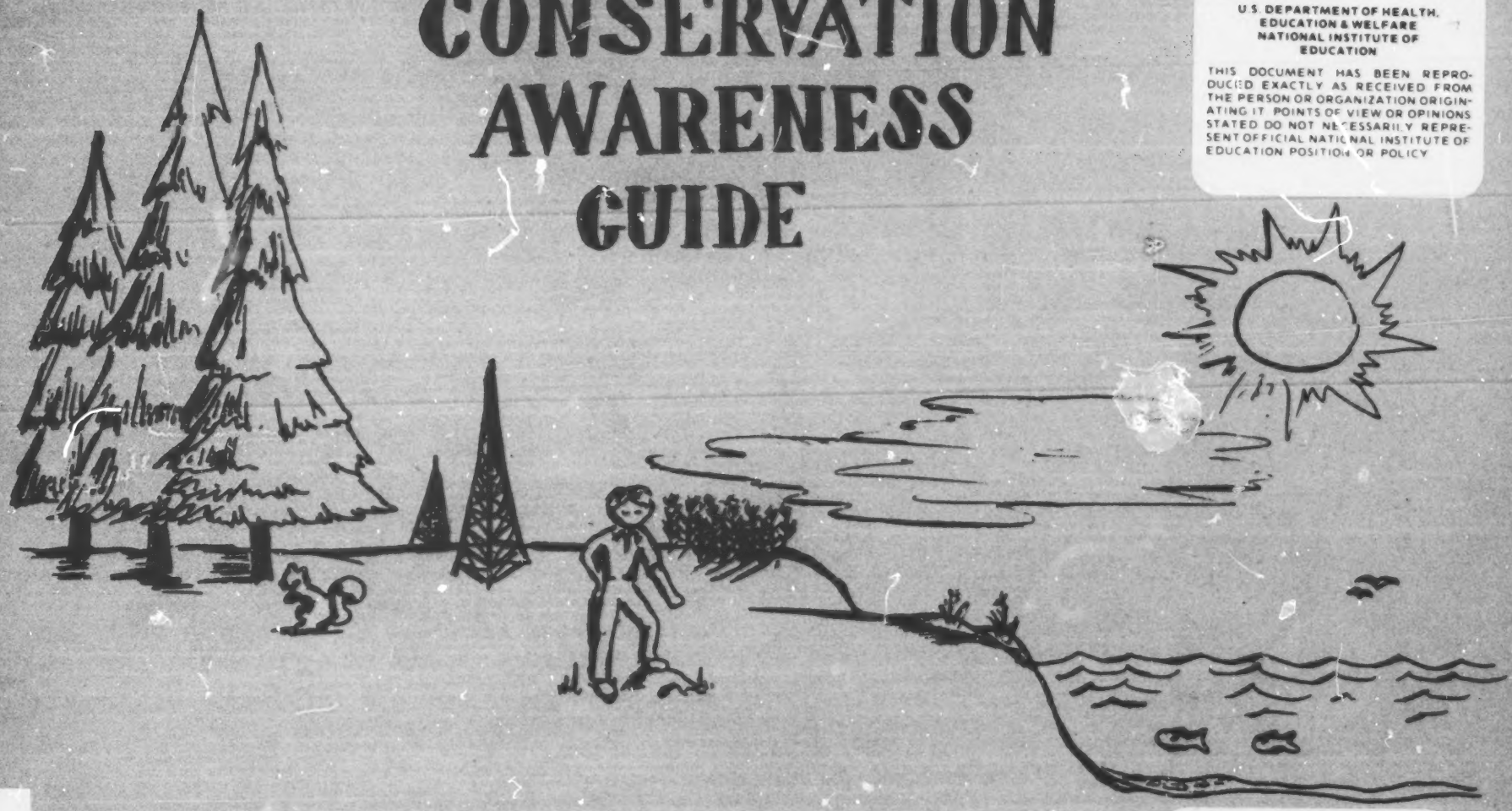
Recommendations for incorporating conservation education into the K-5 curriculum comprise this teacher's guide. Examined are eight natural resources: air, energy, forests and plant life, human resources, minerals, soil, water, and wildlife. Each of these topics is considered in two ways: (1) a chart depicts concepts basic to understanding the resource; and (2) a second chart lists related classroom activities. Both concepts and activities are indicated by grade level. Emphasized are local resources and concerns. (WB)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED193054

1976-77
SANTA ROSA CO.

# CONSERVATION AWARENESS GUIDE



U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

SANTA ROSA COUNTY SCHOOL BOARD

R. M. Locklin
Superintendent of Schools

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
C. Richard Tillis

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SE 032 955

= 2

3

# Santa Rosa County Elementary Guide To Conservation Awareness

APPRECIATION IS EXTENDED TO THE FOLLOWING PEOPLE FOR THEIR ASSISTANCE IN THE DEVELOPMENT OF THIS GUIDE:

Superintendent:
Mr. R. M. Locklin

Board Members:
Mr. Francis L. Johnson
Mrs. Doris Kingry
Mr. Marcus Bonner
Mr. Sammy Lowery
Mr. James Ward

County Staff Coordinator:
Mr. Dan Sheppard

Consultants:
Dr. Lehman Barnes
Florida State University

Mr. Paul Coley
State Department of Education

Conservation Awareness Guide Committee:
Hilda Bell
Juanita Blakemore
Jan Booth
*Sue Dyess
Gwen Enfinger
Frank Felts
Pamela Gabana
Dorothy Greene
Juanita Griffith
Pat Miller
Barbara Olsen
Thelma Phillips
Louise Ponder
Jean Spring
Margaret Stallenwerck
Peggy Vannoy

*Cover Design

This publication was made possible through a grant from the Florida State Department of Education, Office of Environmental Education, C. Richard Tillis, Director.

TABLE OF CONTENTS


I. INTRODUCTION..... 1

II. AIR QUALITY..... 2
A. Air Quality Activities..... 3
B. Air Quality Resources..... 4

III. ENERGY..... 5
A. Energy Activities..... 6

IV. FOREST AND PLANT CONSERVATION..... 7
A. Forest and Plant Conservation Activities.... 8
B. Forest and Plant Conservation Resources.....10

V. CONSERVATION OF HUMAN RESOURCES.....11
A. Conservation of Human Resources Activities..12

VI. MINERALS.....14
A. Mineral Activities.....15

VII. SOIL.....16
A. Soil Activities.....17

VIII. WATER CONSERVATION.....18
A. Water Conservation Activities.....19
B. Chart: Water Usage Per Person.....22
C. How To Build A Solar Still.....23
D. The Water-Cleaning Machine.....24

IX. WILDLIFE.....25
A. Wildlife Activities.....26

## INTRODUCTION

This K-5 Conservation Awareness Guide has been developed by a team of sixteen Santa Rosa County elementary teachers. The materials are designed to offer help and suggestions to classroom teachers who are interested in incorporating environmental education activities into the current elementary curriculum. The Elementary Development Committee is most supportive of the use of environmental themes and concerns in developing instructional plans and encourages teachers to consider these materials for use in their daily planning and teaching.

The overall theme of this guide is conservation awareness. Eight topics are emphasized:

1. Air
2. Energy
3. Forest and Plant Life
4. Human Resources
5. Minerals
6. Soil
7. Water
8. Wildlife

Each topic is considered in two phases: (1) a description of the concepts, ideas, and information concerning the topic and (2) a listing of grade level activities which can be used by the classroom teacher. Throughout the Guide, emphasis is placed on local Santa Rosa County resources, concerns, and issues. It is hoped that this Guide can help teachers in their effort to make local students aware of the rich heritage and resources of this area and the need to be wise stewards of these vital resources.

SANTA ROSA COUNTY ELEMENTARY ENVIRONMENTAL
DEVELOPMENT COMMITTEE

## AIR QUALITY

Concepts:

A. Develop the student's awareness of air quality problems facing his community.
B. Air pollution is a health hazard and an economic problem.
C. Efforts are being made to improve air quality through new ideas and standards.

Purposes:

1. Air is necessary for life.
2. We face many problems of air quality in our community.
3. We are striving to alleviate the problem in our community.

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Introduce what air is. | 1. Air can do work. | 1. Air causes weather. | 1. Man's pursuit of material goods often endangers air quality. | 1. Air pollution causes many health hazards.<br>2. Regions may suffer from air pollution generated in a distant source. | 1. Introduction of atmosphere.<br>2. Generate new ideas of solving air quality problems. |

## AIR QUALITY ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Dust classroom and demonstrate dust in air.<br><br>2. Blow up balloons to show contained air.<br><br>3. Use a straw and blow paint on paper for prints. | 1. Use a bicycle pump to blow up a balloon or a ball.<br><br>2. Use a straw and breathe in to keep a small piece of paper on the other end. Use this in P.E. for team races. | 1. Take a trip to a tall hill. Observe visibility and cloud formation.<br><br>2. Boil water to show evaporation.<br><br>3. Chart data from the weather bureau concerning the air pollution index.<br><br>4. Write and produce a skit. | 1. Make experience chart showing different ways that air is being polluted in our town.<br><br>2. Experiment to show how chemicals are introduced into our air. (Use air freshners)<br><br>3. Make a chart of harmful ingredients that may be introduced in our air.<br><br>4. Montage of numerous cars to show greater amount of cars give greater pollution.<br><br>5. Show or discuss what happens to a country when the numbers of autos are increased. (Such as Switzerland) | 1. Make a survey of air pollution damage. (Wild flowers, dirt, dust, nylon stockings, sickness)<br><br>2. Clip articles of newspaper current events.<br><br>3. Visit oil fields and refinery.<br><br>4. Examine an air condition filter.<br><br>5. Mechanical smoker demonstration.<br><br>6. Located concentrated areas on campus. Find pollution sources. | 1. Make a booklet of what student and family can do to prevent air pollution (compost piles instead of burning)<br><br>2. Report signs of pollution to proper authorities.<br><br>3. Write letters of complaint to factories and legislators.<br><br>4. Study laws on air pollution.<br><br>5. Interview factory representatives about air pollution.<br><br>6. Design your own pollution free car.<br><br>7. Panel discussions.<br><br>8. Contest on original solution.<br><br>9. Selected T.V. programs. |

## AIR QUALITY RESOURCES

1. Air Products and Chemical Company
2. Monsanto Company
3. Exxon Oil Company
4. Sunco Oil Company
5. U. S. Weather Service
6. Air Quality Control personnel
7. Library for resource file
8. Films and slide presentations

# ENERGY

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| What is energy? | How energy is used. | Sources of energy. | Why conserve energy? | Types of energy | Ways to conserve energy - a look into the future. |
| Energy is the ability to do work.<br><br>Energy is so basic that nothing moves or is accomplished without it. | Heat buildings,<br>Transportation,<br>Industry,<br>Lighting,<br>Food for energy,<br>Cooling buildings,<br>Farming,<br>Appliances | Coal<br>Oil Products<br>Natural Gas<br>Falling Water<br>Uranium<br>Wind<br>Food<br>***<br><br>Secondary sources of Energy:<br><br>Electricity | Depleting natural sources<br><br>High cost<br><br>Increasing demand<br><br>Harmful effects on environment | Potential (Stored up energy)<br><br>Kinetic (energy in use)<br><br>Sources:<br><br>Nuclear<br>Solar<br>Review of 2nd grade sources. | Mass transportation<br><br>Improved building construction<br><br>Improved vehicle efficiency<br><br>Improved industrial energy use<br><br><u>New energy sources</u><br><br>Solar<br>Nuclear<br>Geothermal<br>Recycled products<br>Controlled population |

## ENERGY ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Wind energy-<br>Make pinwheel (also heat and water)<br>Physical energy-<br>Throw balls, jump, movement<br><br>Awareness-<br>Picture discussion of energy uses.<br><br>Draw pictures of how energy is used in school.<br><br>Film: "What is Energy" | Experience Charts Listing:<br>Uses of energy-<br>a) at school<br>b) getting from place to place<br>c) getting food<br>d) at home-appliances, heating, cooking.<br><br>Pupil made books on how to use energy.<br><br>Play "Simon Says", simple motions (help children understand they are using energy)<br><br>Use toy demonstrations that use energy.<br><br>Ask principal or custodian to explain energy used in school.<br><br>Sources:<br>My Energy Book by Energy Ant, available through Federal Energy Adm., 30 copies | Divide into groups to research each source of energy.<br><br>Draw pictures of sources of energy.<br><br>Use of filmstrips and films.<br><br>Assemble bulletin board depicting sources of energy. | Design mural showing harmful effects of environmental pollution.<br><br>Make charts, graphs, posters, showing rate at which energy is being used.<br><br>Make list of why such an enormous energy use in recent years.<br><br>Compare utility bills from various households to discover different electrical usages.<br><br>Take home survey on how students' families could conserve energy. | Draw pictures dividing paper in half showing potential energy on one-half and kinetic on the other.<br><br>Make student booklets on chosen sources of energy.<br><br>Listen to the John Denver record "Sunshine", and consider how sun has affected our modern cultural environment. | Write a "Letter to the Editor" critical of a serious energy waste in your community.<br><br>Assemble a bulletin board with a U.S. map posting the percentages of different energy sources used in the U.S.A.<br><br>Make a poster of pictures found in your home of energy users. Figure out which is most and least efficient by using the math problem:<br>wattage of appliance X hours used for a month / 1000<br><br>What you pay per kilowatt hr. = Cost for electricity. |

## FOREST AND PLANT CONSERVATION

Concepts:

A. To show the interdependence of plant life with other resources.
B. To develop a student's awareness of how he is personally affected.
C. To develop positive conservation habits.

Purposes:

1. Forests and plants are renewable resources.
2. Forests are a valuable economic resource.
3. Forests provide recreation and beauty.
4. Forests are dependent upon animals, soil, water, and air.
5. There are many enemies of a forest.

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Introduce the meaning of a forest.<br><br>2. Plants are living things.<br><br>3. Trees are an important part of our environment. | 1. Develop an awareness of local flora.<br><br>2. Plants need soil, water, and air to live. | 1. The forest changes during the season.<br><br>2. Develop the students' aesthetic awareness of the forest. | 1. Forests are one of man's most valuable resources.<br><br>2. Become aware of the major parts of plants. | 1. Forests need to be protected.<br><br>2. Plants can be classified. | 1. Forests are important economically.<br><br>2. All life forms are interdependent.<br><br>3. Processes of plant reproduction. |

## FOREST AND PLANT CONSERVATION ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Nature walk to see a wooded area.<br><br>2. Collect leaves, seed pods, and other identifying parts.<br><br>3. Display leaves for a class chart.<br><br>4. Make crayon leaf prints.<br><br>5. Sketch your favorite tree.<br><br>6. Color a design using fall colors.<br><br>7. Paint a forest mural.<br><br>8. Make seed necklaces.<br><br>9. Play Litterbug Game in TE guide to Conservation.<br><br>10. Read together about forest. Remember Smokey, the Bear. | 1. Visit a wooded area.<br><br>2. Make a list of trees found and collect samples.<br><br>3. Combine identified leaves in a class scrapbook. Add to this during the year.<br><br>4. Play card games to match trees and plants to foliage cards.<br><br>5. Use brayer and water colors to roll leaf prints.<br><br>6. Make string pictures using fall colors.<br><br>7. Identify poisonous plants by filmstrips.<br><br>8. Plant seeds to use in experiments on soil, water, and air. | 1. Observe various shapes of trees. Walk under trees and listen to sounds.<br><br>2. Collect natural food.<br><br>3. Use tape recorder to record friendly and unfriendly sounds.<br><br>4. Make an experience chart showing the five senses used.<br><br>5. Make bird feeders to use at home.<br><br>6. Collect pictures of birds found in their natural habitat.<br><br>7. Chart forest changes during the seasons.<br><br>8. Discuss how we appreciate the aesthetic beauty of woods.<br><br>9. Use leaf samples and pine needles to decorate the bulletin board. | 1. Make plant dyes as violet from grapes.<br><br>2. Take a bus trip through a natural forest.<br><br>3. Scrapbook of natural resources.<br><br>4. Take temperature of air under tree - then in sun. Compare.<br><br>5. List as many uses of wood as possible. Make a list of wise uses and unwise uses. Compare with a friend's list.<br><br>6. Make a bulletin board of by-products, scrapbook.<br><br>7. Plant various plants to acquaint children with how plants grow and survive.<br><br>8. Discuss the forest's part in the "food web." | 1. Make fire prevention posters.<br><br>2. Construct a model forest showing insect damage, erosion, overcutting, disease, overgrazing and urban sprawl.<br><br>3. Collages.<br><br>4. Photography - to illustrate problems in the forest.<br><br>5. Interview resource people of your area.<br><br>6. Distinguish between two types of trees: deciduous and evergreen (conifers). Then let each student identify several of each in the area. Record likenesses and differences as to height and shape, foliage, bark, and vegetation. | 1. Illustrate food chain.<br><br>2. Field trips.<br><br>3. Visit farm animals.<br><br>4. Construct vivarium.<br><br>5. List five ways early settlers depended on trees.<br><br>6. Learn about naval stores.<br><br>7. Describe process of paper making.<br><br>8. Make a display of paper products.<br><br>9. Interview a person from the paper mill.<br><br>10. Creative stories.<br><br>11. Tour paper mill. |

## Forest and Plant Conservation Activities

(continued)

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | 9. Use a puppet show to explain the meaning of a conservationist.<br><br>10. Build a vocabulary chart of key words developed.<br><br>11. Listen to classical music pertaining to the forest during rest period. | 10. Scrapbooks for samples and observations.<br><br>11. Construct a "nature feel" box that may include acorns, ferns, leaves, etc. Describe to class.<br><br>12. Construct various shapes from cardboard. Then try to find these shapes in nature. | 9. Leaf prints in plaster of paris or clay.<br><br>10. Identify three main parts of plants. | | |

## FOREST AND PLANT CONSERVATION RESOURCES

1. Munson Nursery Farm
   Early spring harvest and processing of seedlings.
   Good place to get seedlings to plant.

2. St. Regis Paper Company
   Mr. J. D. Fulford, Contact Person
   Preservation of forest, paper making, tree farming.

3. Department of Conservation
   Mr. Alton Harris, Contact Person

4. University of West Florida Nature Trails

5. Pensacola Environmental Museum

6. Allentown Environmental Area
   Mr. Bill Lundin, Contact Person
   Allentown High School Agriculture Teacher

## CONSERVATION OF HUMAN RESOURCES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. The uniqueness and importance of each person. | 1. Importance of helpers.<br><br>2. Our dependence on each other. | 1. Protection, Safety, and Health (a personal responsibility) | 1. Community helpers (expanded).<br><br>2. Identify helpful group behavior. | 1. Cultures in the county and around the world.<br><br>2. Distinguish between needs and wants.<br><br>3. Cultural uses of human resources. | 1. City and county planning in health laws, housing, entertainment, recreation, drugs, and medical services.<br><br>2. Aesthetic activities planning.<br><br>3. Population control.<br><br>4. Observe wastes in school and find solution. |

## CONSERVATION OF HUMAN RESOURCES ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1.a. Show the series of films "The Most Important Person," Media Center.<br><br>b. Take pictures of each child and use on a bulletin board entitled "Important People."<br><br>c. Using a "Magic Circle"(5-6 students at the time) let each child tell what he thinks is important about the others.<br><br>d. Let each child draw a picture of his favorite pets, toys, school activities,etc.<br><br>e. Discuss likenesses and differences of students. | 1.a. Use student helpers in school and discuss the importance of each.<br><br>b. Make paper hats depicting different jobs and let students discuss how each helps others.<br><br>2.a. Discuss family members and emphasize jobs of each and how they help the other members of the family.<br><br>3. Discuss the reasons for school rules. Let the principal come in for a "question period." | 1. Protection - personal responsibility.<br>Puppets showing correct dress (tied shoes, socks, warm clothing in winter)<br><br>Workers who protect us: police, fireman, doctors, weather forecasters, sanitation workers, bus drivers. Pantonmine and guess.<br><br>2. Safety - personal responsibility. Bicycle, school, playground, corridors, home. Child from upper grade bring bicycle, show safety features and demostrate rules.<br><br>3. Health - personal responsibility. Make up lunch menu, prepare, and share healthful snack trays, mosiacs of seeds and flakes of foods in basic four. Write poem about good health..Draw clocks showing bedtime and wake up time. Draw pictures of things. | 1. Conduct a bicycle safety campaign, teaching parts of bicycle, hand signals and road signals.<br><br>2. Encourage students to participate police bicycle campaigns.<br><br>3. Learn the elements of simple first aid, give plays, posters for other classes.<br><br>4. Make a chain or write chain letters in which each person passes safety lessons learned at school to others at home or in the neighborhood.<br><br>5. Make a mobile of a composite person that you would like to be or have as a best friend. | 1. On an outline map of the county identify rural and urban areas. Compare life styles and needs in these areas.<br><br>2. Study the culture of several parts of the world to compare clothing, housing, foods. Make a culture line around the world to show how these are alike-different.<br><br>Debate on whether your T.V. habits change your values.<br><br>4. Have communications changed cultures? Show on posters how.<br><br>5. Design a new culture for a new planet. | 1. Brief walk... list beauty and ugliness observed.<br><br>2. Chart... planned community activities for visual, auditory values.<br><br>3. Plan an improvement for school plant in aesthetic value.<br><br>4. Clip photos of man-made environment. Conduct public interviews - ask people about feelings toward these-why-how they might change it.<br><br>5. Bulletin board of various life styles (Ex. a.pursuit of pleasure,b. contemplative life, c. full participation in social group, d. dominating by physical action, e. balance of action thought, |

## CONSERVATION OF HUMAN RESOURCES ACTIVITIES
(continued)

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | | that make you sad, teacher happy. | | | enjoyment, etc.<br><br>6. Observe and list waste in school environment and determine possible solution.<br><br>7. Find population of city, county, increase in five years. List problems, resources. Make time line of population growth. Speaker from city or county on planning. |

## MINERALS

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Recognize rocks have different colors. | 1. Introduce the concept that minerals give rocks their color. | 1. Introduce the concept that minerals are found in soil, water, and food. | 1. Acquire understanding that earth's animals need minerals.<br><br>2. Recognize that plants get minerals from the soil. | 1. Identify rocks containing the more familiar minerals.<br><br>2. Recognize different plants require different minerals.<br><br>3. Identify minerals the body needs. | 1. Identify, classify, and collect rocks.<br><br>2. Uses of minerals as fuel, etc.<br><br>3. Create an interest in recycling.<br><br>4. Discuss correct mining procedures.<br><br>5. Develop an understanding of how some minerals help the body. |

## MINERAL ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Share rocks that children bring.<br><br>2. Collect rocks from playground.<br><br>3. Use rocks in counting.<br><br>4. Make sand castles. | 1. Share rocks that children bring.<br><br>2. Discuss rocks including size, shape, color, and texture.<br><br>3. Read stories about rocks. (Sylvester and the Magic Pebble)<br><br>4. Use sand, gravel or small pebbles to make or outline pictures.<br><br>5. Play games. (Who Has the Pebble?) | 1. Make simple rock collections.<br><br>2. Examine rocks with magnifying glass.<br><br>3. Make simple rock animals.<br><br>4. Write a story about rock animals.<br><br>5. View films and filmstrips.<br><br>6. Read stories about rocks.<br><br>7. Experiment with plants in different types of soil. | 1. Experiment to establish that soil contains minerals. Pour water through soil and filter to remove residue. Let water evaporate and examine thin layer of minerals that remains.<br><br>2. Continue with experiments with plants in different types of soil.<br><br>3. View films and filmstrips.<br><br>4. Watch alum, salt, and sugar crystals grow.<br><br>5.Make paper weights from rocks or jars of colored sand. | 1. Take a field trip around the school to discover all the ways in which rocks and minerals are used in the school building.<br><br>2. Have a resource person demonstrate rock polishing.<br><br>3. View films and filmstrips.<br><br>4. Read books about minerals. | 1. Display and identify(igneous, sedimentary, and metamorphic) rocks children bring.<br><br>2. Make oral and written reports on rocks and formation of Grand Canyon.<br><br>3. Participate in formulating a school-wide plan for collecting aluminum cans and foil for recycling.<br><br>4. View films and filmstrips.<br><br>5. Do some rock polishing. |

## SOIL

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Observe and describe.<br>Orally identify physical characteristics of soil.<br>What color?<br>How does it feel? | 1. Uses of soil.<br>a) Soil helps provide homes for animals.<br>b) Soil needed to grow food and vegetation. | 1. What is soil?<br><br>2. Types of soil and their properties:<br>Humus<br>Sandy<br>Clay<br>Loam<br><br>3. Classification of soils and kinds of plants which grow best in each:<br>a) cacti<br>b) grasses<br>c) forests | Types and causes of soil erosion and methods of prevention.<br><br>Effects of weather (storms, rain, freezing)<br><br>Sheet erosion<br><br>Contour plowing<br>Terrace farming<br>Cover crops | Man's dependence on soil for survival.<br><br>Food<br>Forestry products<br><br>Web of Life ( interdependence of the basic strands, air sun, water, soil with plants, animals and fungi:<br><br> <br> | 1. Soil Development:<br>Composting, Mulching, and Crop Rotation<br><br>2. Chemical and Physical Changes in the Earth's Crust Change into soil.<br>a) weathering of rocks,<br>b) decomposition of litter and vegetable materials<br>c) effects of wind and water on the development of an island (dune ecology). |

## SOIL ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Ask children to bring samples of different kinds of soil to class.<br>a) Touch and Tell, feel the soil and tell how it feels.<br><br>b) Tell how the soils are alike, different.<br><br>c) Look at soil particles under magnifying glass.<br><br>2. Make sand paintings from soil samples. | 1. Bring in a section of rotting log and/or soil section and examine for animal life.<br><br>2. Set up an ant farm.<br><br>3. Set up a terrarium and add toads and earthworms to observe activity.<br><br>4. Make a mural of animals and their homes underground.<br><br>Spread a thin sandy soil on newspapers. Examine it and a layer of rich soil. Suggest to children that the rich soil might contain some plant life or seeds that we cannot tell are there.<br><br>Let them put rich soil in one planter and light, sandy soil in another. Water - place on window ledge Observe what happens. | 1. Make sand vases putting layers of different types of soil in clear glass jars.<br><br>2. Take four containers (1 of each type of soil). Plant a seed in each and observe which is best for growth.<br><br>3. Four pots of soil of different types. Pour water through each and measure the amount to see which type holds the most water. | 1. Farm tour with Mr. Alton Harris from Ag. Dept.<br><br>2. Mound soil 8" high in sand table or metal pan. Direct a trickle of water from a water source over the top. Look for evidence of particles of soil being carried down hill. Sprinkle chalk dust over the top and follow the movements as it is carried downhill.<br><br>3. Make student books with pictures showing causes and prevention of soil erosion. | 1. Do acidity tests with litmus paper.<br><br>2. Trip to Munson forest to observe soil conditions and vegetation.<br><br>3. Draw a food chain to illustrate web of life concept.<br><br>4. Organize an Arbor Day celebration for the school.<br><br>5. Tree stump history. | 1. Decomposition of "typical" garbage (cans, paper, glass, plastic). Make sketches, bury, and leave several months. Dig up and compare.<br><br>2. Dune Ecology trip to Fort Pickens.<br><br>3. Make a compost pile from grass clippings and leaves to use in organic garden.<br><br>4. Make an organic garden.<br><br>5. Rub together two identical rocks and record the time required to produce a gram of silt. Use a variety of common rocks to demonstrate how much time and energy is required to build soil.<br><br>6. Soil profile with clear plastic tube or pipe. |

## WATER CONSERVATION

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Forms of water.<br><br>2. Uses of water.<br><br>3. Water is essential for life. | 1. Types of water - salt and fresh and life found in each.<br><br>2. Water is used for transportation and a source of food.<br><br>3. Describe water. | 1. The water cycle.<br><br>2. Clouds<br><br>3. Tides<br><br>4. Weather | 1. Structure of water.<br><br>2. % of water is the earth?<br><br>3. % of water in the body? | 1. How does water conduct sound?<br><br>2. Evaporation, condensation, and purification of water.<br><br>3. Underground streams.<br><br>4. Destructive force of water.<br><br>5. Constructive uses of water. | 1. Microscopic life in water.<br><br>2. Control of water.<br><br>3. Desalination of water.<br><br>4. Alternate water sources.<br><br>5. Instruments to measure weather. |

# WATER CONSERVATION ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1.a. Show the children forms of water. Let them feel, taste, smell, and discuss the likenesses and differences.<br><br>1.b. Show pictures of the different kinds of solid water (snow, ice, sleet, etc.) Let the children talk about them.<br><br>2. Discuss uses of water. Let children draw pictures for a bulletin board about those uses.<br><br>3.a. Do an experiment with plants showing that water is essential to life. Let the children discuss if they think the same thing would happen to people and animals. | 1. Visit or use books to investigate salt and fresh water. List or draw pictures of life in each. Visit Gulfarium.<br><br>2. Make a (student's) bulletin board or booklet of foods grown in water and modes of water transportation.<br><br>3. Play "Super-Spy" Take a nature walk, discover all the different places water is found (leaves puddles, streams, ponds, etc.) Discuss source - how long it will be there. Be Private Eyes and discover things about it. Color, why, moving, still, etc. The Great Escape - where will it go? and how? | 1. Do a water cycle.<br><br>2. Make a 3-D peep show to illustrate different types of clouds.<br><br>3. Keep a chart of low and high tides from newspapers. List the differences of low and high tides.<br><br>4. Learn how tides are related to moon position by chart or posters.<br><br>5. Compare the cultures of people in warm and cold climates to see how weather affects people, crops, clothing, housing. | 1. Impurities in water can be removed by: get a gallon can and punch holes in the bottom. Add a layer of gravel several inches thick. Cover with a thick layer of sand. Can should be half full. Make a solution of dirty water. Catch the water that comes out. Repeat using salty water. Taste | 1. Sea water can be desalted by using one quart of sea water or salt solution. Let sand settle and taste.<br><br>Use teapot and hot plate. Place water in teapot with piece of glass over spout. The water will condense and run down. Collect water in glass. Taste. | 1. On large local map locate and label water areas, water supply, sewage plant, watershed, dump.<br><br>2. Shade in sources of water pollution:<br>a. residential<br>b. factories<br>c. recreation<br>d. farmlands<br>e. military<br><br>3. Desalination of water *See supplementary page for charts. Discuss use of ship's waste stearn. Land based stills (Kuwait), waterworks plant (Freeport, Texas) Freezing, osmosis *Build a solar still collage of water being used in different ways (327 billion gal. per day in 1980, 443 billion gal. day in U.S. 160 billion gal. day) |

WATER CONSERVATION ACTIVITIES
(continued)

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 3.b. Let students help set up an aquarium in classroom. | | | 2. To make water safe for drinking, boil for ½ hour. Cool and stir to eliminate flat taste. Wait 30 min. before drinking.<br><br>3. To show the properties of water conduct a series of experiments showing that water supports objects; begin with leaf - work up to larger objects.<br><br>4. Make a collage to show how important this property is by providing water transportation to people of the world.<br><br>5. Changes of water into water steam-uses of these as well as problems caused.<br><br>6. Changes of water as they occur in weather; as sleet, snow, hail. Compare good and harm done by both. | 2. What detergents do to tap water. Use 1 quart of tap water and 1 quart of soapsy water. Paper towels- five empty containers- pen-masking tape and pencil. Bring two small fish - Put fish in soapsy water and see how long they can stay. Move into fresh water. Filter soapsy water and try fish again.<br><br>3. Collect water from several sources filter, examine the residue to see that water contains many impurities.<br><br>4. On a large map, locate all the areas of the world covered by salt water, then fresh water.<br><br>5. Experiment to show that fresh water is replaced by salt if supplies are depleted by having two water types in a container of soil. Remove fresh water & salt water will replenish | Visit sewage treatment plant. Find how many gallons per hour, homes designed to serve, where discharged?<br><br>Sketch path of waste water from home until it returns.<br><br>*Diagram nature's good water-cleaning machine.<br><br>Study water bills cost per gal. (.00087¢)<br><br>Figure water wasted dripping faucet. Find total water used by families in class. (average daily water per person in U.S. 50 gallon).<br><br>Make list with family of ways to save water.<br><br>Chart the responsibilities of local, state, and federal govt. concerning water quality standards. |

WATER CONSERVATION ACTIVITIES
(continued)

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | | | | lost fresh water.<br><br>6. Make a collage or a 3-D mural showing the past and present and future uses of water by man. | |

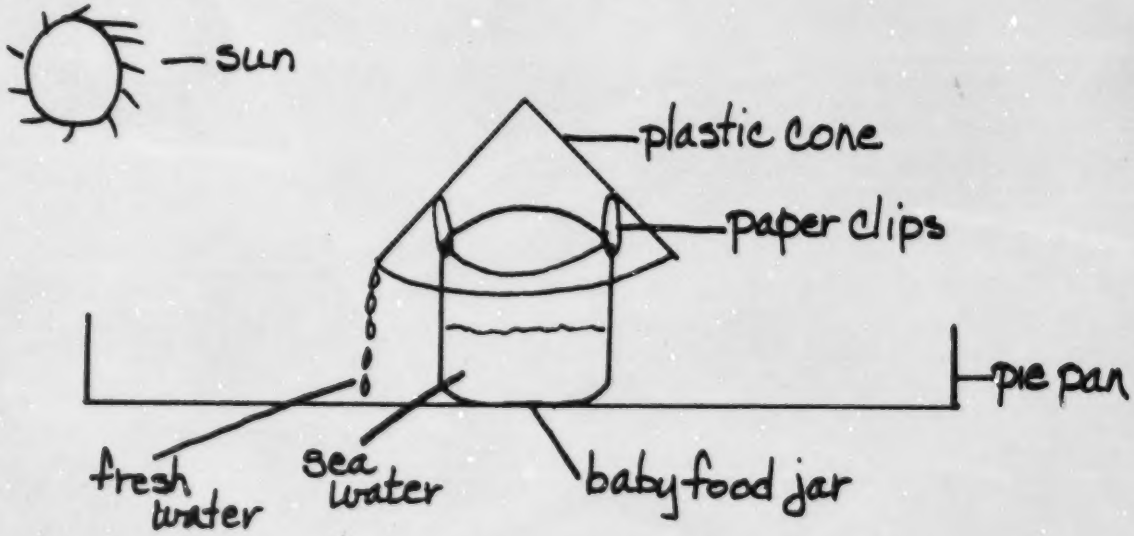
CHART
Water Usage Per Person

| | |
|---|---|
| Bath | 30 gallons |
| Shower | 20 gallons |
| Toilet | 3-5 gallons per flush |
| Wash Face | 2 gallons |
| Brush Teeth | ¼ gallon |
| Drink | ¼ gallon |
| Wash Dishes | 8 gallons |
| Cook a Meal | 5 gallons |
| Clothes Washer | 32 gallons |

## How to Build a Solar Still

**Materials:** sea water
plastic wrap
pie pan
paper clips
baby food jar

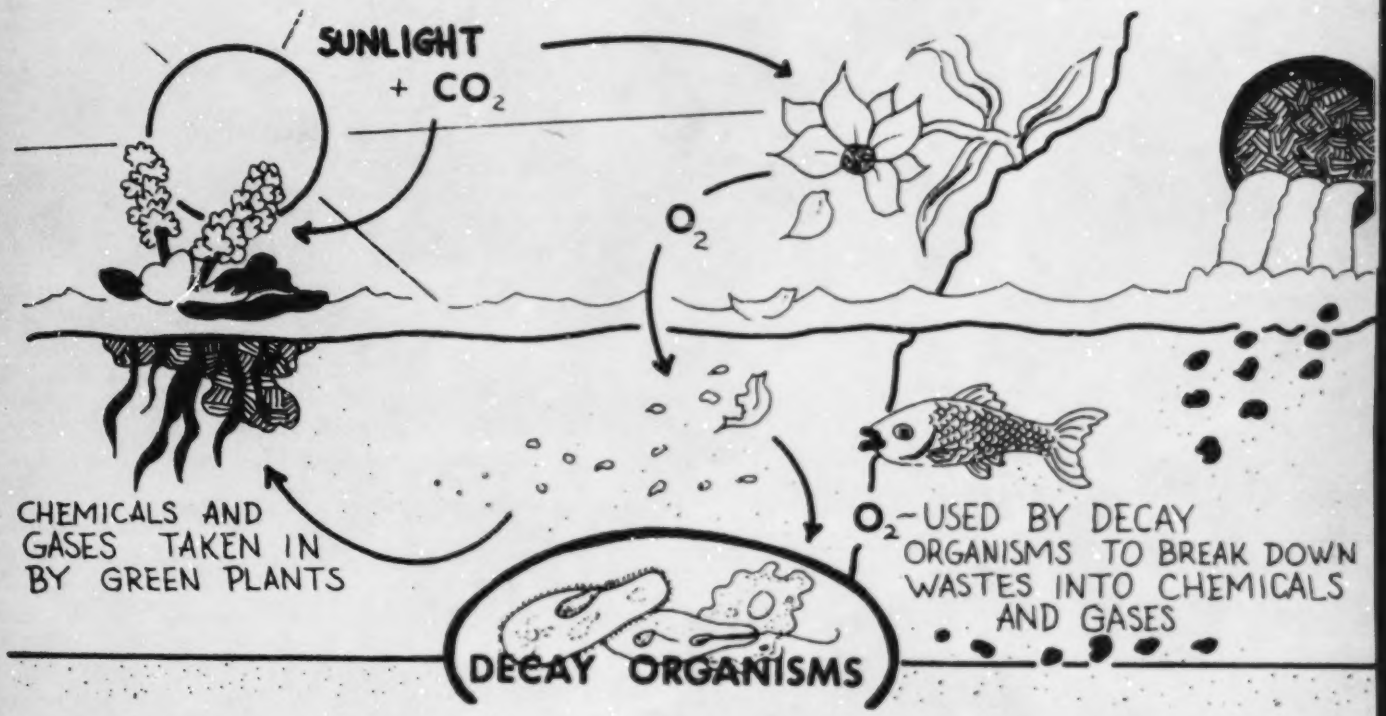
1. Make a cone shape out of the plastic wrap. It should be a little smaller than the diameter of pie pan.
2. Place three or four paper clips along the top of the baby food jar. Fill the jar about half-full with sea water.
3. Place the baby food jar in the center of the pie pan and put the plastic wrap cone on top of the jar. Place the still outside in the sun or on a sunny window sill. (A light can be used instead of the sun, but this destroys the idea of cheap power)
4. The cone should be just inside the edge of the pie pan and above the surface. Leave the still for several hours in the sun.



## The Water-Cleaning Machine

Every living thing on Earth needs water. Water is everywhere — in the air, in our bodies, in the earth's crust. The amount of water on Earth remains constant. We do not get more water. We use the same water over and over. We are able to do this because water is self-cleaning.

The Water-Cleaning Machine


SUNLIGHT
+ $CO_2$
$O_2$
CHEMICALS AND GASES TAKEN IN BY GREEN PLANTS
$O_2$ - USED BY DECAY ORGANISMS TO BREAK DOWN WASTES INTO CHEMICALS AND GASES
DECAY ORGANISMS

The water-cleaning machine works well as long as all the parts are kept in balance. Green plants use sunlight and carbon dioxide to produce food and oxygen. Oxygen is also added to water whenever it mixes with air. The faster moving the stream, the more oxygen it adds. Oxygen is necessary for all animal life. The animals in the water use the oxygen and food from the plants. They give off carbon dioxide and waste. One form of life found in the water is bacteria. The bacteria are called decompsers. They feed on the waste materials. They break waste down into chemicals and gasses which can be used again.

## WILDLIFE

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Introduce wild animals.<br><br>2. Identify the more familiar wild animals (elephants, monkeys, etc.) and where they live and what kind of homes they have. | 1. To identify animals by their characteristics.<br><br>2. Living things reproduce their own kind. | 1. Distinguish between kinds of animals and identify their major characteristics and environmental requirements.<br><br>2. Expand and continue study of reproduction.<br><br>3. Explore local birds and wildlife.<br><br>4. Introduce concept of endangered species. | 1. Recognize that plants and animals are interdependent with one another and their environment.<br><br>2. To distinguish vertebrates and invertebrates.<br><br>3. Identify the category or group to which different animals belong.<br><br>4. Continue exploring local birds and wildlife.<br><br>5. Introduce some of endangered species. | 1. Describe how animals are adapted to their environment.<br><br>2. Introduce life cycles of animals.<br><br>3. Wild animals have inborn instincts for survival. | 1. A general understanding of the reproduction of animals (how likes begets likes)<br><br>2. Continue study of life cycle of animals.<br><br>3. Identify difference between single celled and many celled animals. |

# WILDLIFE ACTIVITIES

| K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Look at pictures of wild animals in their natural habitat.<br><br>2. Listen to records of animal sounds and identify the animal.<br><br>3. Match pictures of baby animals with mother animals.<br><br>4. Learn animal songs.<br><br>5. Play "Who am I" animal games.<br><br>6. Read many animal stories, poems, and riddles.<br><br>7. View films and filmstrips. | 1. Set up an aquarium.<br><br>2. View films and filmstrips.<br><br>3. Make bird houses.<br><br>4. Read many animal stories.<br><br>5. Construct a cage for caterpillars.<br><br>6. Collect and observe caterpillars and cocoons.<br><br>7. Make simple scrapbooks of birds and animals.<br><br>8. Keep a hamster or gerbil and observe.<br><br>9. Play "Natural Protection" card game - match pictures of animals with pictures of how they protect themselves. (Turtle, shell; tiger, claws) | 1. Make posters, bulletin boards, and scrapbooks of different animal groups.<br><br>2. Let children attempt to make a bird's nest and compare with a bird nest.<br><br>3. Read many books about animals.<br><br>4. View films and filmstrips.<br><br>5. Write creative stories about "My Favorite Animal" or "The Animal I Would Like To Be."<br><br>6. Use paper tearing art activity to make animal pictures.<br><br>7. Observe birds in the community and on the playground.<br><br>8. Set up an ant farm. | 1. Collect frog eggs and observe their hatching and developing into a frog.<br><br>2. Take a walk and make a list of all the animals.<br><br>3. View films and filmstrips.<br><br>4. Read many books about animals.<br><br>5. Make a collage of wild animals.<br><br>6. View various types of animal tracks.<br><br>7. Build a terrarium.<br><br>8. Matching game - match name of animal to a true statement about the animal.<br><br>9. Make "puffy" animals. | 1. Make individual terrariums.<br><br>2. Construct mobiles of birds and other wildlife.<br><br>3. View films and filmstrips.<br><br>4. Draw and label the life cycle of a salmon.<br><br>5. Write simple reports on how animals are adapted to their habitat.<br><br>6. Construct and paint paper mache animals.<br><br>7. Have Forest Ranger and Marine Patrol visit classroom. | 1. Do research and make a report on animals that are prehistoric or endangered.<br><br>2. Draw and label the life cycle of a chick.<br><br>3. Capture a spider web on a dark sheet of paper.<br><br>4. Collect pond water and observe animal life through a microscope.<br><br>5. Draw and paint pictures of animals.<br><br>6. Create animal pictures from felt and burlap.<br><br>7. Make A,B,C scrapbook of animals.<br><br>8. View films and filmstrips. |